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1st Ind.

HEADQUARTERS, Dugway Proving Ground, Office of the Commanding Officer, Tooele, Utah, June 28, 1943.

TO: Director, Signal Corps Ground Signal Service, Bradley Beach, New Jersey.

THRU: OC, ESL Group, Dugway Proving Ground, Tooele, Utah.

1. Request in basic communication is approved with the exception that the coordination and liaison between the Signal Corps, Chemical Warfare Service and the N.D.R.C. will be the responsibility of the Commanding Officer, Dugway Proving Ground, who has designated Lieut. Colonel P. A. Leighton, Director of Operations, Dugway Proving Ground, as coordinator of such activities.

/s. J. R. Burns

J. R. BURNS
Colonel, CWS,
Commanding

for Mrs Cannon

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By Authority of Chief Signal Officer

Date 6/8/43 Initials MAN

WAR DEPARTMENT

ESMB-sy Project 743A

Headquarters
Signal Corps Ground Signal Service
Bradley Beach, New Jersey

8 June 1943

SUBJECT: Transfer of Activities.

TO: OC, ESL Group, Dugway Proving Ground, Tooele, Utah,
THRU: Commanding Officer, Dugway Proving Ground, Tooele, Utah.

1. In accordance with decisions made in conference at Dugway Proving Ground on 21 May 1943 and 22 May 1943, it is recommended that approval be granted for the following changes in the prosecution of Project 743A.

a. The transfer of the climatological work, Phase I of this project, from Eatontown, New Jersey to Dugway Proving Ground, Tooele, Utah.

b. The placing of responsibility under Lieut. Colonel Leighton for coordination and liaison between the Signal Corps, Chemical Warfare Service, and the N. D. R. C.

c. The assignment of the following priorities to the Signal Corps phase of the project:

Priority I - Climatological Study.
Priority II - Preparation of Manual on topographical and diurnal effects on mean winds.
Priority III - Forecasting of mean wind from complete data.
Priority IV - Forecasting of mean winds from a single station.

For the Director:

/s/ Oscar C. Maier

OSCAR C. MAIER
Colonel, Signal Corps
Executive Officer

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1st Ind. WSG/lk

COMMANDING OFFICER, Dugway Proving Ground, Tooele, Utah,
21 July 1943.

To: Director, Eatontown Signal Laboratory, Eatontown, New Jersey.

1. The undersigned concurs with the recommendations made in the basic memorandum.

/s/J. R. Burns
J. R. BURNS,
Colonel, C.W.S.,
Commanding.

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EATONTOWN SIGNAL LABORATORY GROUP
DUGWAY PROVING GROUND
TOOELE, UTAH

ESMB-sy-Project 743A 20 July 1943

MEMORANDUM FOR: Director, Eatontown Signal Laboratory, Eatontown, New Jersey. THRU: Commanding Officer, Dugway Proving Ground, Tooele, Utah.

S U B J E C T : Status of Development and Further Contemplated Action on Meteorological Research for High Altitude Chemical Spray.

1. Reference to previous memorandums. Proposals on meteorological research for high altitude chemical spray have been presented in the following memorandums:

a. Memorandum to Commanding Officer, Dugway Proving Ground, Tooele, Utah, dated 1 August 1942, Subject: Proposed Meteorological Research for High Altitude Chemical Spray.

b. Memorandum for Director, Eatontown Signal Laboratory, Fort Monmouth, Red Bank, New Jersey, (THRU: Commanding Officer, Dugway Proving Ground, Tooele, Utah) dated 25 November 1942, Subject: Proposed Schedule of Operations and Further Plan of Action on Research Project 9-30.

c. Memorandum to Director, Eatontown Signal Laboratory, Eatontown, New Jersey, (THRU: Commanding Officer, Dugway Proving Ground, Tooele, Utah), dated 15 January 1943, Subject: Specific Plan of Action on Phase I, Research Project 9-30.

2. Status of development of phases of research.

a. Phase I. Forecasts based on statistical or climatological data.

A specific plan of action on this phase of research was presented in the memorandum referred to in paragraph 1c above. The recommended procedure for research in this phase as detailed in paragraph 3 of that memorandum has been activated for India and the Far East. A preliminary report on this region is in the process of preparation, presenting the results of studies of the mean winds up to 15,000 feet. It is planned to follow this report shortly by supplementary reports on the mean winds up to 10, 20, and 30 thousand feet. In addition it is planned to include upper wind data from New Guinea and Northern Australia at such time as pilot balloon data from Army Air Force Weather stations in this region are made available for analysis and interpretation. Activation of similar studies for Europe is contemplated at such time as the present studies for India and the Far East are near completion.

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b. Phase II. Forecasts based on availability of normal "peace-time" data. This phase of research has been continued in an active state for the purpose of demonstrating the accuracy of forecasts attainable with complete weather teletype data, and for the purpose of assisting limited data forecasters by studies of current weather with suggestions of modifications of existing techniques of forecasting with limited data. A summary of developments in this connection will be prepared during the month of August 1943, including therein a discussion of one year's forecasts. It is planned to continue this research program.

c. Phase III. Forecasts based on limited "war-time" data. A plan of action on this phase of research was presented in the memorandum referred to in paragraph 1b above in amplification of paragraph 2c(4) of the memorandum referred to in 1a above. Operations in single station forecasting were in effect from January through June 1943, at Grand Canyon, Arizona. These operations were continued beyond the two month period originally designated in paragraph 2c(3) (a) of the memorandum referred to in 1b above. This decision was made in consideration of the small advantage that would have been gained by an earlier move to another site as far as the technical objectives of the program were concerned. It is anticipated that a report on the activities in this phase at Grand Canyon, Arizona, now in the process of preparation, will be completed during August 1943.

3. Project analysis and designation of priorities. Reference is made to 1st Indorsement, dated 28 June 1943 to Director, Signal Corps Ground Signal Service, Bradley Beach, New Jersey, on letter file ESMB-sy Project 743A from Executive Officer, Signal Corps Ground Signal Service, Bradley Beach, New Jersey, dated 8 June 1943, Subject: Transfer of Activity, to Officer in Charge, Eatontown Signal Laboratory Group, Dugway Proving Ground, Tooele, Utah, (THRU: Commanding Officer, Dugway Proving Ground, Tooele, Utah). In accordance with the directive contained therein establishing Priority I on climatological studies, Priority II on the preparation of a manual on topography and diurnal effects on mean winds, Priority III on forecasting of mean wind from complete data, and Priority IV on forecasting of mean winds from a single station, transferring for this purpose all phases of research on this project to Dugway Proving Ground, Tooele, Utah, the following recommendations are made:

a. That, upon completion of the climatological study of the Far East, the topographical work be assigned Priority I and the climatological work be assigned Priority II.

ESMB-sy-Project 743A

Ltr. to Dir. ESL, Eatontown, N. J. THRU: CO, DPG, Tooele, Utah.
re Status of Development and Further Contemplated Action on
Meteorological Research for High Altitude Chemical Spray (Contd.) 7/20/43

b. That the nomenclature "Phase I", "Phase II", and "Phase III" be discarded and that project development be reorganized in the following units: Climatological Unit, Topographical Unit, Weather Analysis Unit, and Limited Data Forecasting Unit.

c. That the functions of the above-mentioned units be as follows:

(1) Climatological Unit. "Conduct statistical studies of regional wind systems. Secure published records of daily pilot balloon observations in various regions of the world, compute mean upper winds from these observations up to various heights for the purposes of the project, and analyze and interpret these data as to furnish a forecaster a background of useable statistical data for these regions. Prepare handbook for field use, presenting results of studies of regional wind systems."

(2) Topographical Unit. "Conduct studies of local variations of wind systems. Secure back weather data of pilot balloon observations for selected regions, analyze and interpret these data from the point of view of determining:

(a) The effect of topography on local variations of wind systems and mean winds,

(b) Diurnal effects on wind systems and mean winds,

(c) The effect of atmospheric stability on variations of wind systems and mean winds,

(d) The effect on wind systems and mean winds of non-uniform heating and cooling of the atmosphere as produced by land and ocean or lake contrast.

Conduct limited field studies of variations in winds by means of radio sonde and pilot balloon soundings. Prepare handbook for field use on variations of wind systems and mean winds, showing the effect of extensive mountain ranges on wind systems in general, the effect of relief types on local winds in particular, the effect of land

and water contrasts on diurnal variations in winds, and the predictability of the magnitude and extent of local winds in terms of the physiographic features of the region."

(3) Weather Analysis Unit. "Conduct air mass analysis of all surface and upper air data transmitted over weather teletype networks. Perform research in techniques of limited data forecasting. Conduct trial applications of principles of forecasting local winds as developed by the Topographical Unit."

(4) Limited Data Forecasting Unit. "Operate as a mobile weather unit conducting forecast operations with use of limited data. Conduct limited research on back upper air wind data for the purpose of evaluating diurnal and other local effects on wind systems and mean winds at each forecast station. Conduct trial applications of principles of forecasting mean wind as developed in the Topographical Unit, and trial applications of suggested and/or modified techniques of forecasting with limited data as developed in the Weather Analysis Unit."

d. That in view of the lack of reasonable success in the single station forecasts prepared at Grand Canyon, Arizona, the proposal contained in paragraph 2c (3) of the memorandum referred to in 1a above now be activated and assigned as a function of the Limited Data Forecasting Unit, in place of the proposal contained in paragraph 2c (4) of that memorandum. In particular, limited data forecasts would be prepared from four or five aerological stations in a given region instead of being confined to data from a single station only. It is believed that trial forecasts based on these additional data, augmented by climatological statistics as made available by the Climatological and Topographical Units, would thereby be assured of better success. In this connection it is further proposed to decrease at some later date the number of aerological stations used in the preparation of these forecasts.

WILLIAM H. ABBITT
Captain, Signal Corps
OC, E.S.L. Group
Dugway Proving Ground